

WHAT IS CLAIMED IS:

1. A semiconductor laser driving circuit including a differential output unit which performs differential amplification by receiving complementary input signals, and outputs complementary signals from first and second output terminals, comprising:

an RC filter with a switch obtained by connecting, between said first and second output terminals, two ends of a switching element, two ends of at least one resistor, and two ends of at least one capacitor in series;

two resistors connected in series between a high-potential power supply terminal and said first output terminal;

a high-pass filter or bandpass filter which receives an output from a connecting point between said two resistors, and passes a component not lower than a predetermined frequency;

a detection rectifier which receives a signal passed through said high-pass filter or bandpass filter, converts the received signal into a DC component or low-frequency component, and outputs the DC component or low-frequency component; and

a hysteresis comparator which receives an output from said detection rectifier, outputs an ON signal if the received output exceeds a high-potential threshold value, and keeps outputting the ON signal unless the output from said detection rectifier becomes lower than a low-potential threshold value,

wherein said switching element is turned on and said RC filter with said switch starts operating accordingly when the output ON signal from said hysteresis comparator is supplied to said switching element.

2. A circuit according to claim 1, wherein said high-pass filter or bandpass filter comprises a lossless

passive element, an output impedance is higher than an input impedance, and, letting A (b/s) be a base frequency of the output signals from said first and second output terminals, a low-frequency cutoff frequency is higher than $A/2$ (Hz).

3. A circuit according to claim 2, wherein said detection rectifier has an emitter follower circuit including a capacitive load.

4. An optical communication apparatus comprising:
a semiconductor laser driving circuit cited in claim 2; and

a laser diode which receives an output signal from a first or second output terminal of said semiconductor laser driving circuit.

5. A circuit according to claim 1, wherein said detection rectifier has an emitter follower circuit including a capacitive load.

6. An optical communication apparatus comprising:
a semiconductor laser driving circuit cited in claim 1; and

a laser diode which receives an output signal from a first or second output terminal of said semiconductor laser driving circuit.

7. A semiconductor laser driving circuit including a differential output unit which performs differential amplification by receiving complementary input signals, and outputs complementary signals from first and second output terminals, comprising:

first, second, ..., nth (n is an integer not less than 2) RC filters with switches each of which is obtained by connecting, between said first and second output terminals, two ends of a switching element, two ends of at least one resistor, and two ends of at least one capacitor in series, and which are connected to each other in parallel;

first, second, ..., nth resistor units each of which

includes two resistors connected in series between a high-potential power supply terminal and said first output terminal, and which are connected to each other in parallel;

first, second,..., nth bandpass filters each of which receives an output from a connecting point between said two resistors included in a corresponding one of said first, second,..., nth resistor units, and passes a component not lower than a predetermined frequency;

first, second,..., nth detection rectifiers each of which receives a signal passed through a corresponding one of said first, second,..., nth bandpass filters, converts the received signal into a DC component or low-frequency component, and outputs the DC component or low-frequency component; and

first, second,..., nth hysteresis comparators each of which receives an output from a corresponding one of said first, second,..., nth detection rectifiers, outputs an ON signal if the received output exceeds a high-potential threshold value, and keeps outputting the ON signal unless the output from said detection rectifier becomes lower than a low-potential threshold value,

wherein said switching element included in each of said first, second,..., nth RC filters with said switches is turned on when the output ON signal from a corresponding one of said first, second,..., nth hysteresis comparators is supplied, and a corresponding one of said first, second,..., nth RC filters with said switches starts operating accordingly.

8. A circuit according to claim 7, wherein each of said first, second,..., nth bandpass filters comprises a lossless passive element, an output impedance is higher than an input impedance, and, letting A (b/s) be a basic frequency of the output signals from said first and second output terminals, a low-frequency cutoff

frequency is higher than $A/2$ (Hz).

9. A circuit according to claim 8, wherein each of said first, second,..., nth detection rectifiers has an emitter follower circuit including a capacitive load.

10. An optical communication apparatus comprising:

a semiconductor laser driving circuit cited in claim 8; and

a laser diode which receives an output signal from a first or second output terminal of said semiconductor laser driving circuit.

11. A circuit according to claim 7, wherein said detection rectifier has an emitter follower circuit including a capacitive load.

12. An optical communication apparatus comprising:

a semiconductor laser driving circuit cited in claim 7; and

a laser diode which receives an output signal from a first or second output terminal of said semiconductor laser driving circuit.